# Central and Eastern Europe Countries in the New International Trade Environment at the Beginning of the 21st Century: Global Value Chains and COVID-19

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*Abstract:*

*Purpose: The paper aims to compare CEECs economies in the context of the 2000s in international trade concerning global value chains and assess their ability to respond to rapid global economic changes.*
*Methodology: For this purpose, I propose a two-stage study. The first focuses on analyzing selected indexes describing countries' shares and positions in global value chains (GVC). The second stage is related to the analysis of the latest economic data and CEECs reaction to the changes in international trade in 2020 in GVC. The study uses data from the OECD and WTO Trade in Value Added Database and Eurostat Database.*
*Findings: The dynamics of changes taking place in the global economy in 2020 were significant and profound. The effects of the pandemic were noticeable in all countries of the world. The economic slowdown was global, but individual economies were susceptible to the changes to a different degree. The ability to adapt to rapidly changing conditions has allowed CEECs economies to adjust without delay.*
*Practical Implications: Strong trade ties under new international trade conditions within global value chains positively impact CEECs trade, which recorded moderate international trade growth in 2020 and the first quarter of 2021.*
*Originality/Value: The article examines the latest trends in CEECs using indexes describing the share and position of countries in GVC.*

*Keywords: Global value chains (GVC), Central and Eastern Europe Countries (CEECs), COVID-19, value-added exports, international trade.*

*JEL Code: F13, F15, F6.*

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## 1. Introduction

The changes taking place in the global economy have been exceptionally rapid in recent years (Choi, 2020). The dynamically developing globalization processes are additionally affected by changes that were unimaginable five years ago. On the one hand, the unprecedented decision of Great Britain to leave the European Union, on the other, political events in the United States, where political and economic decisions were announced via Twitter. Besides, 2020 was marked by the effects of the COVID19 pandemic and the temporary lockdown of individual economies.

These changes had a particularly significant impact on the countries of Central and Eastern Europe (CEECs)[2], which at the end of the 20th century underwent a systemic transformation and started the processes of transition into capitalist economies. Openness to the international flow of goods, services, capital, economic transformation, and the related problems of inflation and unemployment were essential elements of the first economic changes. Later integration with the European Union common market and establishing direct and indirect trade with global players significantly changed CEECs economies. Have these accelerated changes, and the readiness of economies for significant changes made CEECs perform better in the new international trade environment and allowed them to withstand better the shock associated with the COVID19 pandemic?

The article compares CEECs economies in the context of changes in the 2000s in international trade concerning global value chains (GVC). The share and position in the GVC of individual countries and industries affect how they cope with dynamic changes in the global economy (Fernandes *et al.,* 2020; Gereffi *et al.,* 2005; Gereffi, 2014; Miroudot and Nordström, 2019). The empirical literature on Central and Eastern European Countries in global value chains is not very broad. The impact of new trade relations on CEECs was mainly analyzed in the whole economies, not the individual industries. Hagemejer and Ghodsi (2014) and Cieślik *et al.* (2016) noted that the manufacturing industry became highly integrated into the GVC.

These studies are, however, limited due to the limited use of statistical data. Ambroziak (2018) studied the relationship of CEECs in the importance of trade in services. He indicated that the exports of some countries (the Czech Republic, Hungary, Slovakia, and Slovenia) had a large share of foreign services, which meant that backward participation in the value chain was an essential element of exports. The rest of the countries (Bulgaria, Estonia, Latvia, Lithuania, Poland, Romania) with less exposure to the GVC showed more robust forward participation for services. This meant that the domestic added value in these countries' services was more often found in their partners' exports. Hagemejer and Mućk (2018) analyzed the sources of growth of domestic value-added. They pointed out that although CEECs countries are still

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[2]*The group of CEECs includes Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.*

technologically retreated, setting up modern export-oriented production facilities in Eastern Europe has involved the growth of capital stock, imports of technology, and inflow of FDI. Cieślik, Biegańska, and Środa-Murawska (2019) examined the roles of CEECs in global value chains after the accession to the EU in selected years. They confirm the positive impact of the economic potential of conditions affecting foreign companies' business opportunities on the role of CEECs in international trade relations and more stable and deep connections within GVCs. Nikulin and Szymczak (2020) analyzed the integration in GVC on the employment contract in Central and Eastern European countries.

Summing up, although studies on the share of Central and Eastern European countries and GVCs were conducted, the analysis contain only data for selected years. Therefore, the article is a supplement and extension of research on CEECs in GVCs and recent changes in the new international trade conditions. The first part of the article is an overview of the indicators used in research on GVC. The second part is a survey of GVC presenting changes in the level of domestic and foreign value added in exports in individual countries and partially by industries. The third part of the article presents the latest economic data and CEECs reaction to international trade changes in 2020.

## 2. Research Methodology

Analysis of trade flows in international input-output tables allows measuring international trade with added value. However, the construction of international input-output tables is a complex process. Therefore only a few actors have undertaken this task (Antras, 2020; World Bank, 2017): (a) The WTO, together with the OECD, has been working on the Trade-in Value Added database (TiVA) since 2012; (b) The University of Groningen leads a collaborative project to develop the World Input-Output Database (WIOD); (c) researchers from Sydney University constructs Eora Global Supply Chain Database. The article uses data from the TiVA database (release 2018), which contains all CEECs from 2005 to 2015. It is possible to compare individual countries' economies regarding their share and dependence on global value chains based on statistical information. The following indicators will be used in the article (Hummels *et al.,* 2001; Koopman *et al.,* 2010; UNCTAD, 2013; Cieslik *et al.,* 2016; OECD, 2016; OECD, 2018a; Yanikkaya and Altun, 2020).

1) Three indicators are used to describe participation in GVC. The total GVC participation index reflects the upstream and downstream links in the trade production process. It can be broken down into two components related to backward and forward trade linkages of an economy with its foreign partners: backward participation index and forward participation index.

1a) Backward participation index (FVASH) assesses foreign suppliers' share in the total value of exports. It is also treated as a measure of backward linkages that may be considered as import content of exports. If individual industries are analysed, it shows

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the intensity of foreign value added content in export. It is defined as foreign value added (FVA) embodied in gross exports (EXGR).

$$GVC_{\text{backward participation}} = \frac{FVA}{EXGR} \qquad (1)$$

1b) Forward participation index presents domestic value added sent to third economies for further processing and future exports to other countries. It is often considered as a measure of forward linkages. It is defined as indirect domestic value added (IDVA) embodied in gross exports (EXGR).

$$GVC_{\text{forward participation}} = \frac{IDVA}{EXGR} \qquad (2)$$

1c) Total GVC participation index is the sum of foreign value added in exports and indirect domestic value added in relation to gross exports. The larger this indicator is, the higher the country's share in the global value chain. It is defined as foreign value added (IDVA) and indirect domestic value added (IDVA) embodied in gross exports (EXGR)

$$GVC_{participation} = \frac{FVA+IDVA}{EXGR} \qquad (3)$$

2) Domestic value added share embodied in foreign final demand (FFDDVA) is an indicator that measures the added value of manufacturing and service industries which is included (through export) in final foreign demand as a share of total domestic value added. This indicator is also known as a measure of export orientation. It can also be calculated for the industry, and then it is referred to as a measure of industry export orientation. It is defined as domestic value added (DVA), from country $c$ and industry $i$, meeting foreign final demand FFD in country $p$, as a percentage of industry $i$ value added:

$$FFDDVA_{c,i} = \frac{\sum_p FFD\_DVA_{c,i,p}}{VA_{c,i}} \qquad (4)$$

3) Position index in the global value chain makes it possible to estimate the country/industry position in global value chains, i.e., to indicate whether a given entity specialises in the first or last production stages (Cheng *et al.,* 2015). If a country is in the early stages of the production chain, it is likely to have a high measure of forward linkages. In such a situation position index takes positive values. If, on the other hand, the backward participation index is relatively high, the country probably imports a lot of intermediate goods and specialises in the final stages of production (index takes negative values).

$$GVC_{position} = \ln(1 + \frac{IDVA}{EXGR}) - \ln(1 + \frac{FVA}{EXGR}) \qquad (5)$$

where (OECD, 2019):

$$\text{EXGR}_{c,i} = \sum_p \text{EXGR}_{c,i,p} \tag{6}$$

Country $c$'s total gross exports for a given industry $i$ is directly calculated from the OECD's annual Inter-Country Input-Output tables by summing exports in intermediate goods and services and exports of final demand goods and services.

$$\text{IMGR}_{c,i} = \sum_p \text{IMGR}_{c,i,p} \tag{7}$$

Total imports of country $c$ is gross imports of intermediates by country $c$ from industry $i$ in country $p$ and gross imports of final demand goods and services.

$$VA_{c,i} = W_{c,i} \tag{8}$$

Value added of country $c$ for a given industry $i$ is extracted like EXGR and defined as production at basic prices minus total intermediate inputs at basic prices ($W$).

$$\text{FVA}_{c,i} = V_c B_c EXGR_{c,i} \tag{9}$$

Foreign value added content of gross exports captures the value of imported intermediate goods and services embodied in a domestic industry's exports.

$$\text{DVA}_{c,i,p} = V_c B_{c,c} EXGR_{c,i,p} \tag{10}$$

Domestic value added content of exports, by industry $i$ in country/region $c$ to partner country/region $p$, represents the exported value added that had been generated anywhere in the domestic economy.

$$\text{IDVA}_{c,i,p} = V_c B_{c,c} EXGR_{c,i,p} \tag{11}$$

Indirect domestic value added content embodied in the gross exports of industry $i$ in foreign countries as a percentage of total gross exports of country $c$ and exports, by industry $i$ in country/region $c$ to partner country/region $p$, represents the exported value added that had been generated anywhere in the domestic economy.

For:

$V_c$ - is a *1 x K* row vector with domestic value added shares of output for each industry $i$ in country $c$;

$B$ - Leontief inverse, or "output multipliers", $B = (I - A)^{-1}$, where $A$ is the global I-O coefficient matrix. $Bc,c$ is a *K x K* diagonal block matrix of $B$ representing total domestic gross output required for one unit increase of country $c$ demand.

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### 3. Results

The primary indicator of participation in global value chains is the total participation index. Many factors influence a country's share of the GVC, and the most important are: (a) distance from neighbouring markets; (b) the size of the internal market; (c) endowment with natural resources.

**Figure 1.** *GVC participation index in CEECs, 2005 and 2015*
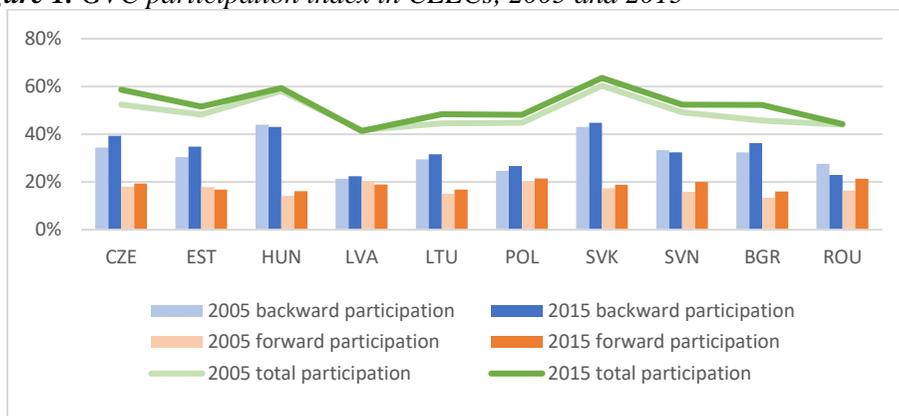


**Source:** *Own elaboration based on TiVA 2018 database, http://oe.cd/tiva.*

In CEECs total GVC participation index ranged from 40% of exports in Latvia to over 60% in Slovakia (Figure 1). In the years 2005-2015, it increased by an average of about three percentage points. Immediately after joining the EU, the period was for CEECs, a time of increased participation in both forward and backward participation in GVC. This trend was halted in 2009 due to the global economic crisis.

The share of exports of foreign value-added decreased, and although it increased at the beginning of 2010, it did not reach the value from 2008, and in the following years, it systematically reduced. The share of domestic value-added in third countries' exports also decreased due to the crisis, but the drops were smaller. Since 2010 the forward participation index has been continuously growing. In comparison to data from EU-17, the CEECs share in GVC is above average. This means that in the case of CEECs, international production chains are essential for economic development.

For all CEECs, backward participation is higher than forwarding participation in GVC. The most significant differences are for Hungary and Slovakia, while Latvia and Romania's even level is typical. The latter also noted a considerable decrease by almost 17% (4.6 percentage points) in backward participation in the analyzed period. Therefore, in the studied group of countries, three groups can be distinguished due to the share of foreign value-added in exports and the size of the economy:

- high share of around 40%: Slovakia, Hungary, and the Czech Republic;

- average share of about 30%: Bulgaria, Estonia, Slovenia and Lithuania, and Poland, whose share is lower but is the largest country in the region with the largest internal market;
- low share of around 20%: Latvia and Romania.

Backward integration is lower for countries specialized in simple commodities and slightly grew for countries concentrated in limited Manufacturing. Countries with liberal trade policies and a high degree of foreign investment have a higher indicator of the foreign value-added share of gross exports. On the other hand, countries specializing in advanced Manufacturing and services rely on imported inputs for exports.

Forward participation of CEECs is more even and ranges from 16% (Hungary) to 22% (Poland). The high share of Polish value added in third countries' exports is also characteristic of relatively large economies. Moreover, a country's abundance of natural resources or agriculture is linked to high forward integration because commodities are used in various downstream production processes that typically cross several borders (World Bank, 2020).

Participation in the GVC varies by industry. Backward participation is relatively high in all industries and highest for Manufacturing. The distribution of individual countries' shares in the industries is similar to the total economy distribution. Again, Latvia stands out with relatively low participation and Slovakia with the highest. Forward participation is more diverse concerning the industry, and the highest is for Manufacturing and the lowest for Mining and Agriculture. Summarising these data indicate the largest share of Manufacturing in the GVC. Therefore, it is also not surprising that the share of services in GVC is relatively high, as they are part of the fragmentation of industrial production.

Domestic production of CEECs depends significantly on final foreign demand. Studying global value chains by analyzing 'export orientation' allows us to understand the world economy's existing interdependencies better. In 2005-2015, the surveyed countries' export orientation increased by 7.7% (Figure 2). The countries with the highest export orientation in 2015 were Hungary (47.5%), Estonia (44.3%), Slovenia (43.9%), and the Czech Republic (43.6). Romania was at the other end with a 28% index.

Foreign consumption of domestic value-added differs depending on the industry. For example, 67% of Manufacturing and 55% of Mining and quarrying of CEECs domestic value-added in 2015 was driven by foreign consumption. This means an increase in the export orientation index in 2005-2015 by about 20%. On the other hand, the highest index growth in the analyzed years concerned Agriculture and averaged 50% for CEECs.

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**Figure 2.** *Total export orientation index of CEECs, 2005 and 2015*
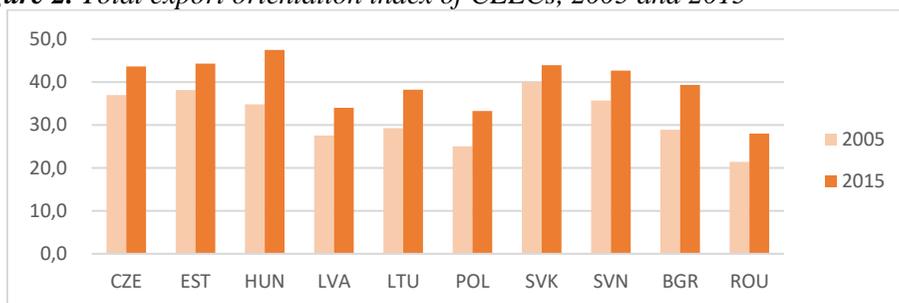


*Source: Own elaboration based on TiVA 2018 database, http://oe.cd/tiva.*

Figure 3 presents a decomposition of total gross export into two components: domestic value-added and foreign value-added. The share of domestic production in exports is the highest in Latvia and Romania, wherein 2005-2015 increased by five percentage points. In Hungary, Latvia, and Slovenia, it remains stable with a slight upward trend. In other cases, the share of domestic value-added fell slightly. This indicates an increase in the share in the VGC in terms of foreign value-added.

**Figure 3**. *Total share of domestic value added (DVA) and foreign value added (FVA) content of gross exports, as a per cent of total gross exports, 2005 and 2015*
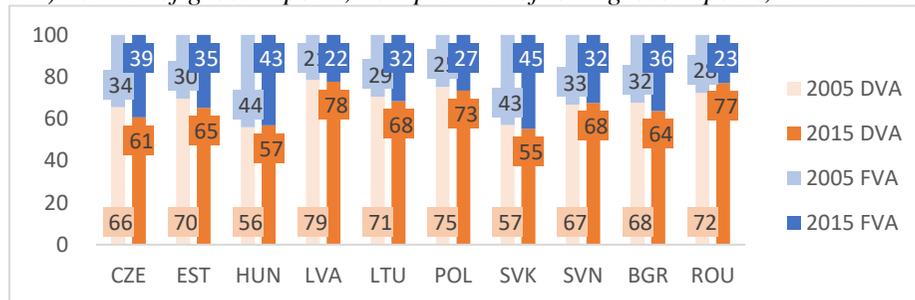


*Source: Own elaboration based on TiVA 2018 database, http://oe.cd/tiva.*

The most significant source of domestic value-added in export is generated by Manufacturing and Total services averagely accounting respectively in 2015 for 34% and 28%. Domestic production for export in Manufacturing is exceptionally significant for Poland, Czech Republic, and Slovenia. However, it is worth noting that the share of domestic value-added in export in Manufacturing decreased in 2005-2015 in almost all CEECs, except Bulgaria and Slovakia. On average, the most important in exportation are Chemicals and non-metallic mineral products (6.7%) and Transport equipment (5.8%). Slovenia and Poland are the leaders in the first group of products, and in the second, Slovakia, Hungary, and the Czech Republic.

Most Central and Eastern European countries have a negative position index, which indicates a specialization in the final production stages (Figure 4). Nevertheless, most of these countries (except Slovakia and Slovenia) strengthened forward linkages in

the production chains in 2005-2015. The opposite relationship occurs in Latvia and Romania, which have a positive position index and increasingly specialize in the early stages of GVC. The exceptional situation is Poland, where the position index, although positive, decreases and is close to 0. The general trend indicates the move of CEECs along global production chains from upstream to downstream production stages.

**Figure 4.** *CEECs total position index in GVC, 2005 and 2015*
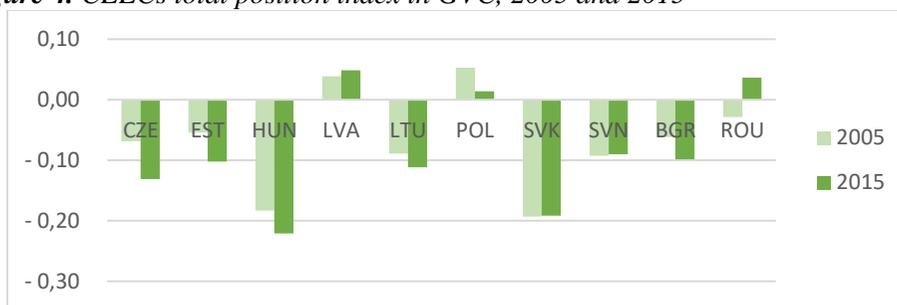


**Source:** *Own elaboration based on TiVA 2018 database, http://oe.cd/tiva.*

In Agriculture and Mining, and quarrying, the analyzed index differs considerably between countries, although a specific pattern can be noticed: the same countries are characterized by a positive (negative) position index in GVC in both industries. In the case of Manufacturing, almost all countries (except Latvia) are in the final stages of production, and in most cases, the share of these processes is increasing. The increased importance of forwarding linkages in the production chains in 2005-2015 occurred in most countries in services (except Hungary and Latvia).

## 4. Discussion

The Central and Eastern European countries' economies have undergone significant and profound changes connected with the political transformation and accession to the European Union. Additionally, accelerating globalization processes and the emergence of 'new normal' international trade forced a flexible approach to the economic changes. As a result, CEECs joined the fragmentation of production by adapting their industry to the new requirements of global production chains, as confirmed by the previous section's data. Has the ability to adapt to new requirements resulted in more excellent resistance to unexpected and rapid shocks when some countries introduced export restrictions (Baldwin and Weder di Mauro, 2020; Evenett, 2020; Kirk and Rifkin, 2020)? To answer this question, one can compare the leading macroeconomic indicators of the CEECs with other EU countries.

When analyzing the GDP growth data (Figure 5), higher increases in 2019 and the first quarter of 2020 can be noticed, which is very important, smaller drops in GDP in the second and third quarter of 2020. The differences from the beginning of 2020 can be explained by the delay in the COVID19 epidemic in Central and Eastern Europe. Nevertheless, the following quarters clearly show that CEECs economies have been

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less affected by the pandemic. However, CEECs were not homogeneous in terms of the scale of GDP reduction. The economies of Slovenia and Slovakia decreased the most in 2020. Estonia, Latvia, and Poland recorded a minor decrease, only around 1% on average, in 2020. Comparing the quarterly GDP growth data with the GVC participation index (Figure 1), there is no correlation between the high (low) share in global value chains and GDP change.

**Figure 5.** *Quarterly GDP growth in CEECs, growth rate Q/Q-4 in %*

|        | Q1 2019 | Q2 2019 | Q3 2019 | Q4 2019 | Average 2019 | Q1 2020 | Q2 2020 | Q3 2020 | Q4 2020 | Average 2020 | Q1 2021 |
|--------|---------|---------|---------|---------|--------------|---------|---------|---------|---------|--------------|---------|
| BGR    | 4,2     | 3,8     | 3,3     | 3,1     | 3,6          | 2,3     | -8,6    | -5,2    | 3,1     | -2,1         | ...     |
| CZE    | 2,4     | 2,3     | 2,2     | 2,0     | 2,2          | -1,9    | -10,8   | -5,0    | 2,0     | -3,9         | -2,1    |
| EST    | 5,6     | 4,9     | 4,6     | 3,8     | 4,7          | 0,6     | -5,4    | -2,7    | 3,8     | -0,9         | 5,0     |
| HUN    | 5,1     | 4,7     | 4,4     | 4,0     | 4,6          | 2,0     | -13,5   | -4,6    | 4,0     | -3,0         | -1,6    |
| LVA    | 3,6     | 2,4     | 1,5     | 0,8     | 2,1          | 0,0     | -1,0    | -8,6    | 0,6     | -3,1         | 0,6     |
| LTU    | 4,9     | 4,4     | 4,1     | 3,9     | 4,3          | 0,0     | 2,2     | -4,6    | 4,1     | -1,0         | 4,1     |
| POL    | 5,3     | 4,7     | 4,4     | 3,9     | 4,6          | 1,9     | -8,0    | -1,8    | 4,0     | -1,0         | -1,4    |
| ROU    | 5,4     | 3,6     | 3,4     | 4,4     | 4,2          | 2,6     | -10,2   | -5,6    | 3,9     | -2,3         | 0,0     |
| SVN    | 4,6     | 3,2     | 2,7     | 2,1     | 3,2          | -3,5    | -12,9   | -2,9    | 2,4     | -4,2         | 2,3     |
| SVK    | 3,1     | 2,4     | 1,8     | 2,0     | 2,3          | -3,8    | -12,1   | -2,3    | 2,2     | -4,0         | 0,3     |
| CEECs  | 4,4     | 3,6     | 3,2     | 3,0     | 3,6          | 0,1     | -9,5    | -3,4    | 3,0     | -2,4         | 0,3*    |
| EU-17  | 2,3     | 2,3     | 2,2     | 2,1     | 2,2          | -1,0    | -12,7   | -4,4    | 2,1     | -4,0         | -0,7    |

**Note:** *... No data.* Data for CEECs are without Bulgaria due to the lack of data.*
**Source:** *Own elaboration based on Eurostat database,*
*https://ec.europa.eu/eurostat/databrowser/view/NAMQ_10_GDP__custom_*
*611516/default/table?lang=en.*

Another indicator that may help assess the economy's state is the final consumption expenditure (Figure 6). It is expenditure by households and enterprises on goods and services used to satisfy individual needs directly. Changes to this indicator for EU-17 and CEECs were almost identical to GDP growth (compare to Figure 5). Therefore, it is also exciting to correlate changes in individual CEECs (Figure 6). In 2019, the average GDP and final consumption expenditure did not differ significantly. In the following year, however, significant differences in the average changes of the latter factor can be noticed, especially in the case of Bulgaria and Latvia.

**Figure 6.** *Final consumption expenditure in CEECs*, growth rate Q/Q-4 in %*

|        | Q1 2019 | Q2 2019 | Q3 2019 | Q4 2019 | Average 2019 | Q1 2020 | Q2 2020 | Q3 2020 | Q4 2020 | Average 2020 | Q1 2021 |
|--------|---------|---------|---------|---------|--------------|---------|---------|---------|---------|--------------|---------|
| BGR    | 3,3     | 5,2     | 4,2     | 4,6     | 4,3          | 3,1     | -0,3    | 2,7     | 4,6     | 2,53         | ...     |
| CZE    | 2,5     | 3,1     | 2,6     | 2,9     | 2,8          | 1,3     | -5,3    | -2,8    | 2,9     | -0,98        | -3,7    |
| EST    | 5,4     | 2,9     | 2,1     | 2,1     | 3,1          | 1,7     | -3,7    | -0,4    | 2,1     | -0,08        | 0,2     |
| HUN    | 3,7     | 3,7     | 4,1     | 5,4     | 4,2          | 3,5     | -6,6    | -2,5    | 6,2     | 0,15         | -1,4    |
| LVA    | 2,5     | 2,5     | 2,5     | 1,5     | 2,3          | -1,5    | -15,2   | -5,5    | 1,5     | -5,18        | -4,8    |
| LTU    | 2,6     | 3,7     | 2,2     | 2,2     | 2,7          | -0,3    | -6,5    | -0,7    | 3,0     | -1,13        | 1,2     |
| POL    | 4,7     | 4,4     | 4,5     | 4,3     | 4,5          | 1,5     | -7,9    | 1,2     | 4,6     | -0,15        | 0,2     |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ROU | 6,6 | 5,2 | 3,9 | 6,8 | 5,6 | 3,8 | -11,7 | -3,4 | 4,9 | -1,60 | ... |
| SVN | 4,2 | 5,1 | 4,7 | 1,9 | 4,0 | -3,4 | -13,1 | -0,4 | 1,9 | -3,75 | 0,4 |
| SVK | 3,1 | 3,9 | 3,0 | 2,8 | 3,2 | -4,5 | 0,7 | -1,4 | -4,0 | -2,30 | 0,0 |
| CEECs | 3,9 | 4,0 | 3,4 | 3,5 | 3,7 | 1,1 | -7,8 | -1,3 | 3,5 | -1,1 | -0,9* |
| EU-17 | 2,5 | 2,1 | 2,3 | 2,0 | 2,2 | -1,0 | -10,5 | -1,8 | 2,1 | -2,8 | -1,3 |

**Note:** *... No data. * Bulgaria and Romania were not included in CEECs due to a lack of data.*
**Source:** *Own elaboration based on Eurostat database,*
*https://ec.europa.eu/eurostat/databrowser/view/NAMQ_10_GDP__custom_*
*611516/default/table?lang=en.*

Changes in expenditure related to the economic slowdown affected the exports and imports volumes in the global economy in 2020. On the one hand, individual countries introduced economic activity restrictions, which limited the production of goods and services, so there was less demand for imported materials and simple commodities. However, on the other hand, even when there was a demand for imported products, it turned out that foreign suppliers could not provide the required materials. Mainly, it was due to downtime in China, one of the main links in global value chains.

Figure 7 shows changes in the volume of exports in 2020 compared to 2019. Values above 100% indicate an increase in exports in the year of the COVID19 pandemic. The declining trend in February-April was very similar in CEECs and other EU countries. From May to the end of 2020, a clear upward trend can be noted, but it is worth emphasizing that in the CEECs, this dynamic was higher, and from September 2020, exports have reached the level of 2019. Similar changes took place in imports. However, in this case, the imports reached a pre-pandemic level later, in November.

## 5. Conclusions

The dynamics of changes taking place in the global economy in 2020 were tremendous and profound. The effects of the pandemic were noticeable in all countries of the world (Baldwin and Freeman, 2020, Kano and Oh, 2020, Vidya and Prabheesh, 2020). The economic slowdown was global, but individual economies were susceptible to the changes to a different degree. It would seem that countries heavily involved in global production chains would be infected with the problems of other related economies due to the shock. The article compares (a) data on participation in global value chains in the context of the new international trade environment and (b) fundamental economic data for 2019, 2020, and partially 2021 in Central and Eastern Europe and 17 other European Union countries. This comparison allowed us to initially answer how CEECs are doing in the conditions of dynamic changes in the global economy.

When analyzing the share of Central and Eastern European countries in global value chains, one can notice, in comparison to data from EU-17, that the CEECs share in GVC is above average. The high export orientation index also confirms this. This means that international production chains are crucial to transforming CEEC's

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economies. However, the CEECs economies' links are very diverse, which allowed for lower GDP drops in 2020. It also resulted in a relatively minor reduction in final consumption expenditure.

**Figure 7.** *Merchandise export and import for selected economies, growth rate M/M-12 in %*





*Source: Own elaboration based on Eurostat database, https://ec.europa.eu/eurostat/databrowser/view/EXT_ST_27_2020MSBEC__ custom_610362/default/table?lang=en.*

The high rate of backward integration linkages means that the CEECs specialize in advanced manufacturing and services. As a result, they are more dependent on imported inputs for exports (World Bank, 2020). Despite this, CEECs economies' flexibility was so enormous that the average level of exports in CEECs reached the level from before the pandemic by the end of the year. On the other hand, a significant share of forwarding participation of CEECs is indicated by the increase in exports to a stable level in the middle of the year and exceeding a pre-pandemic level in the second half of the third quarter of 2020.

The favorable position index in GVC in terms of service activities and the high share of services in Manufacturing positively affect the CEECs economies. Expanding service activities is one way to improve the benefits of participating in GVCs. Services are created mainly in the initial and final stages of the value chain, where the most added value is generated (Ambroziak, 2018). Therefore, summarising stronger trade ties within global value chains positively impacts CEECs trade, which recorded moderate international trade growth in 2020.

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